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[54] TRANSGENIC PATHOGEN-RESISTANT ORGANISM

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[58] Field of Search 424/94.2, 94.61; 514/12; 435/200, 209

[56] References Cited

U.S. PATENT DOCUMENTS

4,940,840 7/1990 Suslow et al. 800/205

FOREIGN PATENT DOCUMENTS

440 304 8/1991 European Pat. Off. .

OTHER PUBLICATIONS

R. Leah et al., "Biochemical and Molecular Characterization of Three Barley Seed Proteins With Antifungal Properties", J. Biol. Chem. 266(3): 1564-1573, Jan. 1991.

S. Wnendt et al., "Cloning and Nucleotide Sequences of a cDNA Encoding the Antifungal-Protein of *Aspergillus giganteus* and Preliminary Characterization of the Native Gene", Nuc. Acid Res. 18(13): 3987, Jul. 1990.

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[57] ABSTRACT

Transgenic pathogen-resistant organism whose genome contains at least two different genes under the control of active promoters with pathogen-inhibiting action. This organism is distinguished by a synergistic pathogen-inhibiting action. This action is evident particularly when the genes code for the gene products chitinase (ChiS, ChiG), glucanase (GluG), protein synthesis inhibitor (PSI) and antifungal protein (AFP).

2 Claims, 2 Drawing Sheets